

-30-

WHAT IS CLAIMED IS:

1. A multiple discharge load electronic ballast system, comprising:
 - a utility interface comprising a utility input, a direct current (DC) distribution output, and a nominal distribution power rating at the DC distribution output;
 - a distribution bus, operatively coupled to the DC distribution output; and
 - a plurality of electronic ballasts, operatively coupled to the distribution bus, wherein a respective electronic ballast comprises adaptations for DC voltage control and an alternating current (AC) end output and has a maximum ballast power rating at the AC end output, wherein a sum of the maximum ballast power ratings of the plurality of electronic ballasts is greater than the nominal distribution power rating of the utility interface.
2. The multiple discharge load electronic ballast system of claim 1, wherein the sum of the maximum ballast power ratings is greater than the nominal distribution power rating by at least 25 percent.
3. The multiple discharge load electronic ballast system of claim 2, further wherein the sum of the maximum ballast power ratings is greater than the nominal distribution power rating by at least 50 percent.

-31-

4. The multiple discharge load electronic ballast system of claim 1, wherein the adaptations for DC voltage control of the electronic ballast comprise a DC to DC converter, capable of providing a local DC voltage.

5. The multiple discharge load electronic ballast system of claim 4, wherein the DC to DC converter is further capable of providing the local DC voltage at over 2,000 volts.

6. The multiple discharge load electronic ballast system of claim 4, wherein the DC to DC converter comprises a step-up/down converter.

7. The multiple discharge load electronic ballast system of claim 4, wherein the adaptations for the AC end output comprise an inverter, operatively coupled to the DC to DC converter, and capable of receiving the local DC voltage from the DC to DC converter, and inverting the local DC voltage to provide an AC end voltage at the AC end output.

8. The multiple discharge load electronic ballast system of claim 7, wherein the respective electronic ballast is further adapted such that the AC end output conforms to voltage and current requirements for ignition and operation of a discharge load.

9. The multiple discharge load electronic ballast system of claim 7, wherein the respective electronic ballast is

-32-

further adapted to allow for the individual selection of a regular operating power of the respective AC end output, independently of other electronic ballasts of the plurality.

10. The multiple discharge load electronic ballast system of claim 7, wherein the inverter is further capable of inverting the local DC voltage at over 2,000 volts.

11. The multiple discharge load electronic ballast system of claim 7, wherein the inverter comprises a square wave inverter.

12. The multiple discharge load electronic ballast system of claim 7, wherein the DC to DC converter is further adapted such that the AC end voltage is individually controllable, independently of other electronic ballasts of the plurality.

13. The multiple discharge load electronic ballast system of claim 7, wherein the DC to DC converter is further adapted such that the AC end voltage is individually selectable from a substantially continuous range of voltages.

14. The multiple discharge load electronic ballast system of claim 1, wherein the utility interface comprises a multiple phase transformer coupled to the utility input and

-33-

a rectifier coupled between the multiple phase transformer and the DC distribution output.

15. The multiple discharge load electronic ballast system of claim 14, wherein the utility interface is further adapted to provide the distribution output at from 600 to 1,000 volts.

16. The multiple discharge load electronic ballast system of claim 1, further comprising a voltage sensor operatively coupled to the distribution bus.

17. The multiple discharge load electronic ballast system of claim 1, wherein each of the electronic ballasts comprises a DC to DC step-up/down converter operatively coupled to an output of the distribution bus, and a DC to AC square wave inverter operatively coupled to the DC to DC step-up/down converter and to a respective AC end output.

18. The multiple discharge load electronic ballast system of claim 1, further comprising a plurality of ultraviolet discharge lamps operatively connected to the electronic ballasts.

19. The multiple discharge load electronic ballast system of claim 18, further comprising a printing system within which the ultraviolet discharge lamps are adapted to cure inks.

-34-

20. A multiple discharge load electronic ballast system, comprising:

means for receiving electrical power from a utility source and responsively providing a direct current (DC) distribution voltage having a nominal distribution power;

means for distributing the DC distribution voltage to multiple distributed outputs;

means for converting the DC distribution voltage at each distributed output into a respective local DC voltage output; and

means for inverting each respective local DC voltage output into a respective alternating current (AC) end output having a peak power, wherein the nominal distribution power is less than a sum of the peak power of each of the AC end outputs.

21. The multiple discharge load electronic ballast system of claim 20, wherein the nominal distribution power is less than the sum of the peak power of each of the AC end outputs by at least 25 percent.

22. The multiple discharge load electronic ballast system of claim 21, further wherein the nominal distribution power is less than the sum of the peak power of each of the AC end outputs by at least 50 percent.

23. The multiple discharge load electronic ballast system of claim 20, wherein each respective AC end output is

-35-

capable of providing a voltage and a current that conform to the requirements for ignition and operation of a discharge load.

24. The multiple discharge load electronic ballast system of claim 20, wherein each means for converting the DC distribution voltage is capable of providing the respective local DC voltage output at over 2,000 volts.

25. The multiple discharge load electronic ballast system of claim 20, wherein the means for converting the DC distribution voltage is adapted such that the respective local DC voltage is individually selectable, independently of others of the multiple distributed outputs.

26. The multiple discharge load electronic ballast system of claim 20, wherein the means for receiving electrical power from the utility source and responsively providing a direct current (DC) distribution voltage is adapted to provide the DC distribution voltage at from 600 to 1,000 volts.

27. A method of providing electrical power to multiple discharge loads, comprising the steps of:

converting electrical power from a utility source to a DC distribution output, having a nominal distribution power;

distributing the DC distribution output to a plurality of electronic ballasts, each of which has a maximum

-36-

ballast power rating, wherein the nominal distribution power is less than a sum of the maximum ballast power ratings;

receiving the DC distribution output at each electronic ballast and responsively generating a respective AC ballast output having a voltage and a current that are sufficient for igniting and operating a discharge load; and

providing each of the discharge loads with one of the AC ballast outputs.

28. The method of claim 27, wherein the nominal distribution power is less than the sum of the maximum ballast power ratings by at least 25 percent.

29. The method of claim 28, further wherein the nominal distribution power is less than the sum of the maximum ballast power ratings by at least 50 percent.

30. The method of claim 27, further comprising the step of individually selecting the voltage of one of the AC ballast outputs.

29. The method of claim 25, wherein the step of responsively generating the respective AC ballast output comprises converting the DC distribution output into a respective local DC voltage output.

-37-

30. The method of claim 29, wherein the step of responsively generating the respective AC ballast output comprises inverting the respective local DC voltage output into the respective AC ballast output.

31. A multiple discharge load electronic ballast system, comprising:

a distribution bus having a nominal distribution power rating; and

a plurality of electronic ballasts, operatively coupled to the distribution bus, wherein a respective electronic ballast comprises adaptations for DC voltage control and an alternating current (AC) output, and has a maximum ballast power rating; and wherein a sum of the maximum ballast power ratings of the plurality of electronic ballasts is greater than the nominal distribution power rating of the distribution bus.